

ABSTRACT

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A fiber optic probe of the type typically used in medical instruments includes an illumination optical fiber having a relatively high Numerical Aperture (NA) for coupling as much light as possible into the fiber at its input end. At the output end, an outwardly flared uniform taper is provided to increase collimation of the light exiting from the illumination end, thereby causing the Numerical Aperture (NA) at the output end of the illumination fiber to be a lower NA than that at the input end. For optical spectroscopy applications, collection fibers are located in close proximity to or surrounding the tapered output end of the illumination fiber for collecting reflected or scattered light rays from a target for use in qualitative and quantitative analysis of material.